

**A SIGNIFICANT INTERCEPTION OF THE GREEN VEGETABLE BUG,  
*NEZARA VIRIDULA* (LINNAEUS) (HEMIPTERA: PENTATOMIDAE)  
IN THE UK**

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**Abstract**

The green vegetable bug, *Nezara viridula*, is an important agricultural pest and is expanding its geographical range northward in Europe. In February 2005, 132 adults were intercepted at a nursery in Devon on terracotta pots imported from Italy. The potential for this interception to have established a breeding colony, and the risk to protected agriculture in the UK is discussed.

**Introduction**

*Nezara viridula* (L.), commonly known as the Green Vegetable Bug or the Southern Green Stinkbug, is regularly intercepted in the UK by the plant quarantine service on a wide range of imported plants and produce. The Central Science Laboratory (CSL) has recorded twenty interceptions of *N. viridula* since 1930, with Italy as the most recurrent country of origin. This widespread species is known as one of the most important agricultural pests in the world (Meglic *et al.*, 2001) and is of considerable ecological and agricultural interest as it is highly polyphagous, feeding on plant species in more than thirty families, with a preference for legumes and brassicas (Panizzi, 1997). In the absence of control measures it is a major pest of soya beans, cereals, cocoa, macadamia and pecans, as well as a minor pest of a wide range of fruit and vegetable crops (CABI, 2004). In temperate climates, the shieldbug overwinters as an adult in diapause, hiding in locations that give protection from cold weather such as under leaf litter, bark, or any object that offers protection (Todd, 1989).

Interceptions of *N. viridula* on imported plants or produce usually consist of one or two adults. However, on the 3 February 2005, a total of 132 live adult *N. viridula* were intercepted at a fruit farm and nursery near Barnstaple, Devon, by the Plant Health and Seeds Inspectorate of the Department for Environment, Food and Rural Affairs (Defra). The shieldbugs arrived among a consignment of terracotta pots received directly from the manufacturer in Rovigo, Italy (50 miles south of Venice). The shieldbugs were identified by CSL, and found to have an almost 1:1 male to female ratio and five distinct colour morphs, though the majority were of the reddish-brown (russet) type (**PLATE K**). Winter mortality is one of the major limiting factors of *N. viridula* populations worldwide, and overwintering survival is reportedly greater for females than males, and for those with the russet coloration (Todd, 1989). Due to the high number of individuals present, and the fact that Devon with its mild climate is further south than the northern limits of its worldwide distribution, it is likely that a small colony would have had the potential to survive the winter and establish an outdoor breeding population the following summer had the discovery not been made.

Changes in geographical distribution driven by climatic change, such as northward expanses in range have been documented in many insect species. *Nezara viridula* provides a good example; in Europe its range has spread as far north as Northern France, and into Germany, Hungary and Slovenia (CABI, 2004; Rédei & Torma, 2003; Virant-Doberlet *et al*, 2000). Isolated populations have also been present in Southern Russia (CABI, 2004; Shtakelberg, 1949). It has also expanded its range northwards in Japan and reached Osaka following average temperature increases recorded in the region (Musolin & Numata, 2003). As a strong flier it has undoubtedly utilised wind and weather frontal systems, as well as the lanes of commerce to expand its range (Todd, 1989). The shieldbug's spread in South America is related to the increased acreage for soya bean production (Panizzi *et al*, 2000). As cropping patterns of susceptible cultivated plants change in Europe, it is likely that *N. viridula* will further expand its distribution.



**Plate K.** Five colour morphs of *Nezara viridula* (L.) from Rovigo, Italy; a Plant Health and Seeds Inspectorate sample identified by the Central Science Laboratory (image Crown Copyright courtesy of CSL).

### Potential for colonization of Britain

Three outdoor breeding colonies of *N. viridula* were discovered in the UK in the summer of 2003 (Barclay, 2003; Shardlow & Taylor, 2004). Should isolated populations such as these continue to reproduce successfully, and further stowaways such as the large number intercepted in Devon arrive undetected, would *N. viridula* have the potential to establish itself as an economically important plant pest in the UK?

Two of the UK populations discovered breeding in London were feeding on unripe tomatoes outdoors (Barclay, 2003). The shieldbug is a major pest of tomatoes in parts of North America, where its feeding punctures retard the growth of the fruit and significantly lower its market value, and also provide a route for fungal and bacterial infections (Sikora, 2000). The expansion in range of this pest in Europe is presumably related in part to its association with a number of greenhouse crops (Clercq *et al.*, 2002). Therefore it is possible that glasshouses in the UK could provide a suitable climate for eggs or gravid females that may be accidentally introduced, and tomatoes, cucurbits and cruciferous crops could be among the crops most at risk.

Voucher specimens of the *N. viridula* population from Devon have been deposited at CSL, the Natural History Museum, London, and Manchester Museum.

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